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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/684,568	10/06/2000	Yukio Tanaka	SEL 219	2087

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EXAMINER

JORGENSEN, LELAND R

ART UNIT	PAPER NUMBER
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2675

DATE MAILED: 03/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/684,568

Applicant(s)

TANAKA, YUKIO

Examiner

Leland R. Jorgensen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 15.17.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1- 49 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant amended independent claims 1, 2, 15, 18, 21, 36, and 43 to describe pixels having a first TFT, a gate driver having a second TFT and the source driver having a third TFT. The specification teaches a TFT in the pixel and several TFTs in the driver circuit. Specification, p. 23, ¶ 1 and figure 12. The specification, however, does not teach that the gate driver has a TFT and that the source driver has a TFT.

Further, the specification and the amended claims do not match in critical details. The specifications teach a first N channel TFT 6102 with LDD region 810 overlapping the gate electrode 6071 and a second N-channel TFT 6103 with LDD regions 814 and 815 which do not overlapped gate electrode 6072. See specification, pp. 24-25, and figure 12. The specification teaches a P-channel TFT 6101 but does not teach an a LDD region or an associated electrode for the P-channel TFT. The specification teaches a Pixel TFT 6104 with LDD regions 820-823 but

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does not teach any relationship with any gate electrode. Thus, the specification does not mesh with the critical new language of the amended claims adding that “wherein said first TFT (pixel TFT) has first LDD region not overlapping a gate wiring of said first TFT, and each of said second TFT and said third TFT has a second LDD region overlapping gate wirings of said second TFT and said third TFT respectively.”

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 2, 7, 12 – 23, 36, 41 – 43, 48, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki et al., USPN 6,339,411 B2, in view of Ha, USPN 5,940,151.

Claims 1, 2, 15, 18, 21, 36, and 43

Miyazaki teaches a display device. Miyazaki, col. 1, lines 4 – 8.

Miyazaki teaches a pixel portion with $m \times n$ pixels. Miyazaki, col. 2, line 60 – col. 3, line 14. A gate driver [line scan shift register 22a] feeds n gate signal lines. Miyazaki, col. 8, lines 16 - 30; and figure 7B. Source drivers [dot scan shift registers 22b, 22c, 22d] feed m source signal lines. Miyazaki, col. 8, lines 6 - 15; and figure 7B. Miyazaki, in figures 5A – 5C, shows that $m < n$.

Miyazaki teaches a video data converter circuit wherein the video data converter circuit converts a digital video datum (h, k) ($h = 1, 2, 3, m-1, m$) and ($k = 1, 2, 3, \dots, n-1, n$). Miyazaki, col. 5, lines 21 – 40; col. 6, line 36 – col. 7, line 3; and figure 3. Although Miyazaki does not specifically state that the video datum (h, k) is converted into $\{m \times (k - 1) + h\}$ -th video datum,

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such conversion takes place. Compare the conversion shown in the specification, figures 3, 5, 6, and 7 with the conversion shown in Miyazaki, figure 5C and described in Miyazaki col. 6, line 36 – col. 7, line 3. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to find the equation taught by Miyazaki. Miyazaki invites such by teaching a head-mounted display,

Here, in the head-mounted display described above, considering the need to make the display part positioned in front of the eyes of the user small and light and considering aesthetic design aspects, it is desirable for the head-mounted display to be made small in the front-rear direction.

Miyazaki, col. 2, lines 21 – 25. Miyazaki adds,

Thus because of the difficulty of reducing the size of the liquid crystal panel 80 in the vertical direction there has been the problem that it is not possible to realize size reduction of a head-mounted display in the front-rear direction.

It is therefore an object of the present invention to provide a display device with which it is possible to effectively realize size reduction in the vertical direction.

Miyazaki, col. 2, lines 53 – 59. Miyazaki then adds,

With the first provision of the invention described above, because a data stream obtained by vertical-horizontal converting ordinary image data by means of vertical-horizontal converting means is supplied to the displaying means and the display operation is executed by vertical pixel rows being scanned in the horizontal direction, it becomes natural for the line scan driving circuit to be disposed above or below the display region in the displaying means. In other words, it becomes unnecessary for a pixel driving circuit requiring a large area for circuit provision to be disposed above or below the display region, and as a result there is the effect that it becomes possible to effectively reduce the size of the displaying means in the vertical direction. And when the display device is to be mounted in a head-mounted display, this makes it possible to reduce the size of the head-mounted display in the front-rear direction.

Miyazaki, col. 3, lines 49 – 64. Miyazaki concludes,

When according to the other provision of the invention mentioned above two units of the displaying means are disposed left-right symmetrically and the

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display controlling means supplies image data and scanning signals to these two displaying means so that they display the same image while mutually inverted in a top-bottom direction and in a left-right direction, there is the effect that it is possible to raise the freedom of configuration design of for example a head-mounted display or the like.

Miyazaki, col. 4, lines 28 – 36.

Miyazaki does not teach a pixel TFT nor the drive TFTs.

Ha teaches wherein a first TFT (pixel TFT) that has first LDD region [lightly doped LDD region 12] not overlapping a gate wiring [source/drain electrodes 11S and 11D] of said first TFT.

Ha, col. 4, lines 47 – col. 5, line 3; col. 6, lines 30 – lines 65; and figure 4A and 4B. Ha teaches a second TFT [N-type TFT] and said third TFT [P-type TFT] that has a second LDD region [LDD region 22] overlapping gate wirings of said second TFT and said third TFT respectively.

Ha, col. 4, lines 47 – col. 5, line 3; col. 6, line 66 – col. 7, line 21; and figure 5A and 5B.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the drive circuit TFT as taught by Ha with the display device as taught by Miyazaki to improve driver performance and the process steps in production of the displays. Ha, col. 4, lines 15 – 29.

Claims 15 and 36 each add that the video data converter circuit has a video formatter, a memory and an address generator. Miyazaki teaches video formatter [memory controller 9], a memory 3b, and an address generator [driving circuit part 10]. Miyazaki, col. 7, lines 31 – 35; and figure 3.

Claim 18 adds that the gate driver is formed at a lateral side of the pixel portion, and the source driver is formed at a longitudinal side of the pixel portion. Miyazaki teaches such.

Miyazaki, col. 7, lines 44 – col. 8, line 5; and figure 7B.

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Claim 21 adds that the plurality of gate signal lines are vertical and the plurality of source signal lines are horizontal. Miyazaki, col. 8, lines 6 – 63; and figure 7B.

Claim 43 adds two source drivers. Miyazaki teaches at least two source drivers [dot scan shift registers 22b, 22c, 22d]. Miyazaki, col. 8, lines 6 - 15; and figure 7B.

Claims 7, 12, 16, 19, 22, 41, and 48

Miyazaki teaches that the display device is a head mount display 30. Miyazaki, col. 1, lines 4 – 10; col. 5, lines 9 – 16; and figures 8A – 8C.

Claim 13, 14, 17, 20, 23, 42, and 49

Miyazaki teaches that the display device is a liquid crystal display device. Miyazaki, col. 1, lines 5 – 8. Miyazaki, col. 1, lines 3 – 9.

5. Claims 3, 4, 8, 9, 24, 25, 28, 29, 32, 33, 37, 38, 44, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki et al. over Ha as applied to claims 1, 2, 15, 18, 21, 36, and 43 above, and further in view of Yamazaki et al., USPN 6,292,183 B1.

Claims 3, 8, 24, 28, 32, 37, and 44

Neither Miyazaki nor Ha teach a rear projector with three display devices.

Yamazaki teaches a rear projector with three liquid crystal display devices. Yamazaki, col. 7, lines 22 – 24; col 17, line 60 – col. 18, line 3; col. 18, line 61 – col. 19, line 13; and figures 18, 20A and 20B.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the rear projector with three display devices as taught by Yamazaki with the display device of Miyazaki and Ha. Yamazaki invites such combination by teaching,

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The present invention has been made to solve the above problem, and therefore an object of the present invention is to provide a drive circuit that prevents the deterioration of a TFT in a CMOS circuit on a high-voltage side, makes a withstand voltage high, and increases a drive margin in the case where two voltages of a high voltage and a low voltage are provided for a supply voltage to a peripheral drive circuit and a high voltage is needed to be applied to a gate signal line.

Another object of the present invention is to provide a liquid crystal display device using the above drive circuit.

Yamazaki, col. 4, lines 22 – 32. Yamazaki specifically invites the use of a projector with the three display devices by teaching,

The three-plate type liquid crystal projector according to this embodiment displays images corresponding to three primary colors consisting of red, blue and green on three monochrome-display liquid crystal panels 1807, 1808 and 1809, respectively, and lightens the above liquid crystal panels by lights of the corresponding three primary colors. Then, the obtained images of the respective primary-color components are composed by dichroic prism 1810 and then projected onto the screen 1812. Therefore, the three-plate type liquid crystal projector is excellent in display performance (resolution, screen illuminance, color purity).

Yamazaki, col. 18, lines 4 – 14.

Claims 4, 9, 25, 29, 33, 38, and 45

Yamazaki teaches a front projector with three liquid crystal display devices. Yamazaki, col. 7, lines 25 – 28; col 17, line 60 – col. 18, line 3; col. 19, lines 28 – 46; and figures 18, and 21.

6. Claims 5, 10, 26, 30, 34, 39, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki et al. over Ha as applied to claims 1, 2, 15, 18, 21, 36, and 43 above, and further in view of Negishi et al., USPN 5,860,720.

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Claims 5, 10, 26, 30, 34, 39, and 46

Neither Miyazaki nor Ha teach a rear projector with one display device.

Negishi teaches a rear projector with liquid crystal display device. Negishi, col. 1, lines 4 – 17.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the rear projector with one display device as taught by Negishi with the display device of Miyazaki and Ha. Negishi invites such combination by teaching,

A liquid-crystal rear projector is able to reduce its depth and to widen its screen, and such a liquid-crystal rear projector can be easily enlarged in size compared with a television receiver using a cathode-ray tube (CRT).

Negishi, col. 1, lines 18 – 21.

7. Claims 6, 11, 27, 31, 35, 40, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki et al. over Ha as applied to claims 1, 2, 15, 18, 21, 36, and 43 above, and further in view of Braun et al., USPN 5,335,022.

Claims 6, 11, 27, 31, 35, 40, and 47

Neither Miyazaki nor Ha teach a front projector with one display device.

Braun teaches a front projector with liquid crystal display device. Braun, col. 1, lines 9 – 11.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the front projector with one display device as taught by Braun with the display device of Miyazaki and Ha. Braun invites such combination by teaching,

Many computer image, entertainment video, and video teleconferencing services require large-screen displays so that users can realize the maximal benefit

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and effectiveness of these services. A particular concern with large display screens, especially in residential environments, is the volume of living space encroached upon by the video display screen. A solution to this problem would be a true large-screen flat display having negligible depth that can be hung inconspicuously on the wall. This solution, although under research for many years, remains decidedly elusive.

Braun, col. 1, lines 14 – 24. Braun adds,

Another approach to large screen video displays, which minimizes the apparent loss of living space, is front projection systems. A front projection system displays an image by directing the projected light from the projector onto a projection screen which diffusely reflects the light back into the viewing area.

Braun, col. 1, lines 33 – 38. Braun then teaches an object of invention.

An object of our invention is to provide a front projection video display system, which yields high contrast without requiring darkened ambient conditions and minimizes the encroachment on the volume of living space unlike conventional rear projection visual display systems.

Braun, col. 2, lines 14 – 19.

Response to Arguments

8. Applicant's arguments with respect to claims 1 - 49 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kimura et al., USPN 6,542,137 B2, and Kobayashi et al., USPN 5,767,930, each teach a display having pixel and driver TFTs.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leland Jorgensen whose telephone number is 703-305-2650. The examiner can normally be reached on Monday through Friday, 7:00 a.m. through 3:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven J. Saras can be reached on 703-305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:


(703) 872-9306

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Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding
should be directed to the Technology Center 2600 Customer Service Office, telephone number
(703) 306-0377.

lrj



STEVEN SARAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600